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Notice of Allowability	Application No.		Applicant(s)	
	10/672,946		MATSUMOTO ET AL.	
	Examiner		Art Unit	
	Michael Bernshteyn		1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/19/2006.
2. ☒ The allowed claim(s) is/are 1-12.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ 7. <input type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____ |
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Michael Bernshteyn
 Patent Examiner
 Art UNIT 1713

DETAILED ACTION

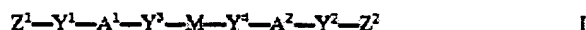
1. This Office Action is a response to the remarks filed December 19, 2006. None of the claims have been amended, cancelled or added.
2. In view of Terminal Disclaimer and Statement of Common Ownership filed on December 19, 2006, the nonstatutory double patenting rejection of claims 1-12 has been withdrawn.
3. Applicant's arguments, see Remarks, pages 1-6, filed December 19, 2006, with respect to claims 1-12 have been fully considered and are persuasive. The rejection of claims 1-12 has been withdrawn.
4. Claims 1-12 are pending.

Allowable Subject Matter

5. Claims 1-12 are allowed.
6. The following is examiner's statement of reasons for allowance:

The present claims are allowable over the closest references: Meyer et al. (U.S. Patent 6,136,225) in view of Kawakami et al. (JP 08-020641 and JP 06-308462).

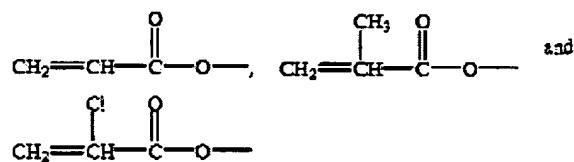
Meyer discloses polymerizable liquid –crystalline compounds of the formula 1:



where Z^1 and Z^2 are radicals containing reactive groups via which polymerization can be effected, Y^1 - Y^4 re a single chemical bond, oxygen, sulfur, a single covalent bond, -O-CO-, -CO-O-, -O-CO-O-, etc.; A^1 and A^2 are spacers having 2 to 30 carbon atoms in which the carbon chain may be interrupted by ether oxygen, thioether sulfur or by

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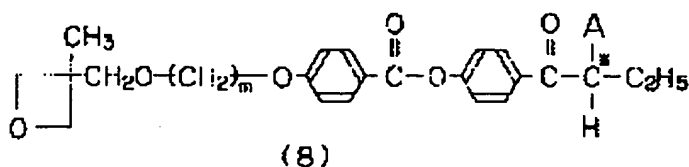
imino or C₁-C₄-alkylimino groups, M is a mesogenic group and R is C₁-C₄ alkyl (abstract). Meyer discloses that preferred polymerizable groups Z¹ and Z² are those, which are susceptible to free radical polymerization, i.e. in particular olefinically unsaturated groups and of these acrylic groups are of particular importance in combination with Y¹ and Y² (col. 3, lines 5-18).



Meyer discloses that it is possible by polymerizing the novel compounds or liquid-crystal compositions to fix the liquid-crystalline ordered state. The polymerization can take place, for example, thermally or photochemically depending on the polymerizable group. It is also possible to copolymerize other monomers with the novel compounds or liquid-crystal compositions. These monomers can be other conventional crosslinkers such as polyvalent acrylates, vinyl compounds or epoxides (col. 21, lines 54-64). This type of polymerization would result in pendant chains after the ethylenic unsaturation of all the monomers are used to polymerize them.

However, Meyer et al. do not disclose or fairly suggest the specific use of oxetane group and that groups with different reactivity are bonded to the mesogen group, that is, combining groups which are different in reactivity from each other. Therefore, when the reactive groups of Meyer are reacted, they are consumed or exhausted by the reaction. Additionally, Meyer does not disclose the use of photo cationic initiator for the process of polymerization.

Kawasaki discloses that for high-molecular liquid crystal with the main chain consisting of polyoxetane, the number-average molecular weight is preferably 1000-1,000,000 (JP'641, abstract) and the area ratio of A (a monodisperse ratio): B (a non-monodisperse ratio) is 10:0 to 9:1 (JP'462, abstract and page 4, [0018]).



Both references are analogous art because they are from the same field of endeavor concerning new polymerizable liquid-crystalline compounds.

However, Kawasaki et al. do not disclose or fairly suggest two different reactive groups bonding to a mesogen group. Kawakami also does not teach an oxetane group, but rather a polyoxetane.

7. As of the date of this Notice of Allowability, the Examiner has not located or identified any reference that can be used singularly or in combination with another reference including Meyer et al. and Kawasaki et al. to render the present invention anticipated or obvious to one of ordinary skill in the art.

8. In the light of the above discussion, it is evident as to why the present claims are patentable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delay, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reason for Allowance".

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Bernshteyn whose telephone number is 571-272-2411. The examiner can normally be reached on M-F 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Bernshteyn
Patent Examiner
Art Unit 1713

MB
03/07/2007



DAVID W. WU
SUPERVISORY PATENT EXAMINER
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